

**ABSTRACT OF THE DISCLOSURE**

The present invention provides a method for reducing and/or controlling the variations of excess fiber length along the length of reeled fiber optic buffer tubes during the manufacture of the buffer tubes. The present invention varies any number, or combination, of parameters during the manufacture of buffer tubes to achieve a substantially uniform excess fiber length along a reeled buffer tube. One embodiment of the inventive method uses monotonically decaying draw or take-up tension of the buffer tubes during winding, combined with a stiffness-compliant pad placed on the reel core to aid in providing a substantially uniform excess fiber length in the tube, while another embodiment uses a monotonically increasing angular speed of the reel in combination with the stiffness-compliant pad on the reel core. In yet another embodiment a pad is placed either periodically or continuously in the windings of the buffer tube to provide an absorbing layer for the residual stresses existing in the buffer tube as it is reeled and after the reeling is complete, combined with re-reeling the buffer tube onto a second reel after the buffer tube has cooled (after manufacture), where the pad is removed during the re-reeling process. Additionally, the present invention can have the layers of buffer tube separated with rigid, cylindrical panels separating the layers. The present inventive method also combines any, or all, of the above steps to aid in achieving a substantially uniform excess fiber length along the length of the reeled buffer tube.